Gerrit Steen
Heraeus Kulzer, Inc.
4315 S.Lafayette Blvd.
South Bend, IN 46614

Re: Registered Construction and Operation Status,
141-12896-00176

Dear Gerrit Steen:

The application from Heraeus Kulzer, Inc., received on October 25, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following blending of dental material and cements, to be located at 4315 S.Lafayette Blvd., South Bend, IN 46614, Indiana, is classified as registered:

(a) Seven (7) natural gas fueled unit heaters, identified as UH-1, UH-2, UH-5, UH-9, UH-14, UH-19 and UH-21, rated at 0.125 million British thermal units (MMBtu) per hour each, exhausting to stacks 2, 6, 12-18, 23-27, and 33-39.

(b) Three (3) natural gas fueled furnaces identified as UH –18, UH –19 and UH –20, rated at 0.5 million British thermal units (MMBtu) per hour each, exhausting to stacks.

(c) Four (4) natural gas fueled furnaces identified as UH –10, UH –11, UH-12 and UH –13, rated at 0.125 million British thermal units (MMBtu) per hour each, exhausting to stacks

(d) Four (4) natural gas fueled furnaces identified as UH –3, UH –6, UH-8 and UH –17, rated at 0.15 million British thermal units (MMBtu) per hour each, exhausting to stacks

(e) Two (2) natural gas fueled boilers identified as Cleaver #1 and #2, rated at 3 million British thermal units (MMBtu) per hour each, exhausting to stacks 9 and 10.

(f) One (1) natural gas fueled boiler identified as Kewanee, rated at 2 million British thermal units (MMBtu) per hour, exhausting to stack 11.

(g) One (1) natural gas fueled boiler identified as York Shipley, rated at 5 million British thermal units (MMBtu) per hour, exhausting to stack 19.

(h) One (1) natural gas fueled boiler identified as Rayterm, rated at 1 million British thermal units (MMBtu) per hour, exhausting to stack 8.

(i) One (1) Gypsum department for repackaged bags and boxes of Gypsum, handling maximum rate of 16,673 pounds per hour, and using two (2) dust collectors DC-2 and DC-3 for controlling dust with collection efficiency of 99.9%, each exhausting to stacks 3-5.

(j) One (1) Pouch department for repackaged pouches of Gypsum, handling maximum rate of 132 pounds per hour, and using one dust collector DC-5 for controlling dust with collection efficiency of 99.7%, exhausting to stacks 3-5.

(k) One (1) Pumice department for repackaged containers of Pumice, handling maximum rate of 62.02 pounds per hour, and using one dust collector for controlling dust with collection efficiency of 99.7%.

(l) One (1) Dental stain department, using 10.1 pounds per hour of Methanol.

(m) One (1) VK line, using 45.2 pounds per hour Isopropyl Alcohol.

(n) One (1) maintenance spray booth, which is capable of painting 0.25 unit per hour, and is equipped with air atomization gun. This spray booth will be used to paint different process equipment used in the manufacture of dental products. The PM overspray from this spray booth will be controlled by dry filters.

The following conditions shall be applicable:

1. Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

   (a) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4. The Source is located north of Kern Road and east of Pine Road in St.Joseph County.

   (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuos opacity monitor in a six (6) hour period.

2. Pursuant to 326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating), the PM emissions from any of the two Cleavers or Kewanee or Rayterm boilers shall not exceed either 0.6 pounds per MMBtu heat input each.

3. Pursuant to 326 IAC 6-3-2 (Process Operations), the particulate matter (PM) from the Gypsum Departments controlled by Dust Collectors DC-2, DC-3 and DC-5, handling up to 16805 pounds per hour of Gypsum shall not exceed 17 pounds per hour. This limit is determined by the following:

   Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

   $E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
   P = process weight rate in tons per hour

   The Dust Collectors DC-2, DC-3 and DC-5 shall be in operation with 99% or more control efficiency at all times the Gypsum Departments are in operation, in order to comply with this limit.

   The maintenance spray booth will be subject to this rule. The PM over-spray emissions from

the spray booth shall be limited using the following equation:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour
and
P = process weight rate in tons per hour

This spray booth will be in compliance with this rule using dry filters to control its PM over-spray emissions.

4. Actual Volatile organic compounds (VOC) emissions before control from the maintenance spray booth shall be kept below fifteen (15) pounds per day. Daily records of the coating used and the solvent contents of each shall be kept for a minimum period of thirty six (36) months and shall be made available upon request of the Office of Air Management. Therefore, the requirements 326 IAC 8-2-9 (Miscellaneous Metal Coatings) will not apply.

This registration is revised registration issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Management that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

GS

cc: File – St.Joseph County
St.Joseph County Health Department
Air Compliance – Rick Reynolds
Northern Regional Office
Permit Tracking - Janet Mobley
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak

Registration
Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	**Heraeus Kulzer, Inc.**
Address:	**4315 S.Lafayette Blvd.**
City:	**South Bend, IN 46614**
Authorized individual:	**Gerrit Steen**
Phone #:	**219-299-6653**
Registration #:	**141-12896-00176**

I hereby certify that Heraeus Kulzer, Inc. is still in operation and is in compliance with the requirements of Registration 141-12896-00176.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	**Heraeus Kulzer, Inc.**
Source Location:	**4315 Lafayette Blvd, South Bend, IN 46614**
County:	**Saint Joseph**
SIC Code:	**3843**
Operation Permit No.:	**141-12896-00176**
Permit Reviewer:	Gurinder Saini

The Office of Air Management (OAM) has reviewed an application from **Heraeus Kulzer, Inc.** relating to the construction and operation of blending of dental material and cements*.*

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

(a) Seven (7) natural gas fueled unit heaters, identified as UH-1, UH-2, UH-5, UH-9, UH-14, UH-19 and UH-21, rated at 0.125 million British thermal units (MMBtu) per hour each, exhausting to stacks 2, 6, 12-18, 23-27, and 33-39.

(b) Three (3) natural gas fueled furnaces identified as UH –18, UH –19 and UH –20, rated at 0.5 million British thermal units (MMBtu) per hour each, exhausting to stacks.

(c) Four (4) natural gas fueled furnaces identified as UH –10, UH –11, UH-12 and UH –13, rated at 0.125 million British thermal units (MMBtu) per hour each, exhausting to stacks

(d) Four (4) natural gas fueled furnaces identified as UH –3, UH –6, UH-8 and UH –17, rated at 0.15 million British thermal units (MMBtu) per hour each, exhausting to stacks

(e) Two (2) natural gas fueled boilers identified as Cleaver #1 and #2, rated at 3 million British thermal units (MMBtu) per hour each, exhausting to stacks 9 and 10.

(f) One (1) natural gas fueled boiler identified as Kewanee, rated at 2 million British thermal units (MMBtu) per hour, exhausting to stack 11.

(g) One (1) natural gas fueled boiler identified as York Shipley, rated at 5 million British thermal units (MMBtu) per hour, exhausting to stack 19.

(h) One (1) natural gas fueled boiler identified as Rayterm, rated at 1 million British thermal units (MMBtu) per hour, exhausting to stack 8.

(i) One (1) Gypsum department for repackaged bags and boxes of Gypsum, handling maximum rate of 16,673 pounds per hour, and using two (2) dust collectors DC-2 and DC-3 for controlling dust with collection efficiency of 99.9%, each exhausting to stacks 3-5.

(j) One (1) Pouch department for repackaged pouches of Gypsum, handling maximum rate of 132 pounds per hour, and using one dust collector DC-5 for controlling dust with collection efficiency of 99.7%, exhausting to stacks 3-5.

(k) One (1) Pumice department for repackaged containers of Pumice, handling maximum rate of 62.02 pounds per hour, and using one dust collector for controlling dust with collection efficiency of 99.7%.

(l) One (1) Dental stain department, using 10.1 pounds per hour of Methanol.

(m) One (1) VK line, using 45.2 pounds per hour Isopropyl Alcohol.

(n) One (1) maintenance spray booth, which is capable of painting 0.25 unit per hour, and is equipped with air atomization gun. This spray booth will be used to paint different process equipment used in the manufacture of dental products. The PM overspray from this spray booth will be controlled by dry filters.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

(a) 141-8703-00176 issued on August 18, 1997.

All conditions from previous approvals were incorporated into this permit.

Air Pollution Control Justification as an Integral Part of the Process

The company has submitted the following justification such that the Dust Collectors be considered as an integral part of the Gypsum handling process:

(a) The dust collectors are essential to control dust so that the workers can work in the area without damaging their health. Without the dust collectors it will be impossible to be present in this area.

(b) The material, which is collected in the dust collector, is completely re-cycled and has a cost advantage for the company.

IDEM, OAM has evaluated the justifications and agreed that the dust collectors will be considered as an integral part of the gypsum handling process. Therefore, the permitting level will be determined using the potential to emit after the dust collectors. Operating conditions in the proposed permit will specify that these dust collectors shall operate at all times when the gypsum handling is in operation.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
1	Compactor Dust Collector	16	0.6	3300	76
3-5	Gypsum Dust Collector	18	1.0	3300	79
8	Rayterm Boiler	40	1.33	265	300
9-10	Cleaver Brooks Boiler	16	1.0	600	272
11	Kewanee Boiler	35	0.83	600	363
19	York Shipley Boiler	35	1.0	2400	363
2, 6, 12-18, 23-27, 33-39	Unit Heaters	28	0.83	300	250
	VK Line	8	1.0	800	80

Recommendation

The staff recommends to the Commissioner that the ***construction and operation*** be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on October 25, 2000.

Emission Calculations

See Appendix A page 1 through 4 of this document for detailed emissions calculations.

Potential To Emit of Source

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as Athe maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.@

Pollutant	Potential To Emit (tons/year)
PM	0.73
PM-10	1.23
SO_2	-
VOC	6.89
CO	6.4
NO_x	7.7

(a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any criteria pollutant is less than 25 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.5 and a

registration will be issued.

(b) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in St.Joseph County.

Pollutant	Status **(attainment, maintenance attainment, or unclassifiable; severe, moderate, or marginal nonattainment)**
PM-10	Attainment
SO_2	Attainment
NO_2	Attainment
Ozone	Maintenance
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. St.Joseph County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) St. Joseph County has been classified as attainment or unclassifiable for all criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	0.3
PM10	0.8
SO_2	-
VOC	3.04
CO	6.4
NO_x	7.7

(a) This existing source is **not** a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source is still not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

This status is based on all the air approvals issued to the source.

Federal Rule Applicability

(a) The Natural gas fired boilers are not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR 60.40, Subpart Dc), because the boilers are rated at less than 10 million BTU per hour.

(b) There are no other New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in St.Joseph County and the potential to emit any criteria pollutant is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of thirty percent (30%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4. The Source is located north of Kern Road and east of Pine Road in St.Joseph County.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating)

The sources of indirect heating at this plant location are subject to this rule. Pursuant to 326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating), the PM emissions from any of the two Cleavers or Kewanee or Rayterm boilers shall not exceed either 0.6 pounds per MMBtu heat input or the limit based on following equation whichever is less:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where Pt = Pounds of particulate matter emitted per million Btu heat input.
Q= Total source maximum operating capacity rating in million Btu per hour heat input. The maximum operating capacity rating is defined as the

maximum capacity at which the facility is operated or the nameplate capacity, whichever is specified in the facility's permit application, except when some lower capacity is contained in the facility's operation permit; in which case, the capacity specified in the operation permit shall be used.

As the Pt value from the equation above is higher than 0.6 pounds per million Btu heat input for all four boilers, 0.6 pounds per million Btu heat input will be the limit for these boilers.

326 IAC 6-3-2 (Process Operations)

The particulate matter (PM) from the Gypsum Departments controlled by Dust Collectors DC-2, DC-3 and DC-5, handling up to 16805 pounds per hour of Gypsum shall not exceed 17 pounds per hour. This limit is determined by the following:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

The controlled potential to emit from the Dust Collectors is 0.04 pounds per hour. Therefore this facility is in compliance with this rule.

The Dust Collectors DC-2, DC-3 and DC-5 shall be in operation with 99% or more control efficiency at all times the Gypsum Departments are in operation, in order to comply with this limit.

The maintenance spray booth will be subject to this rule. The PM over-spray emissions from the spray booth shall be limited using the following equation:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

This spray booth will be in compliance with this rule using dry filters to control its PM over-spray emissions.

326 IAC 8-2-9 (Miscellaneous Metal Coating)

This rule applies to all Sources located in any county, which have been constructed after July 1, 1990, and have actual VOC emissions greater than 15 pounds per day.

The maintenance spray booth has potential VOC emissions of 21.04 pounds per day would not be subject to this rule, since its usage mainly is for maintenance purposes. Based on the actual operating hours of 2 hours per week, 52 weeks per year, its actual emissions of 1.4 pounds per day would be less than 15 pounds per day limit.

Conclusion

The construction and operation of this blending of dental material and cements shall be subject to the conditions of the attached proposed Registration 141-12896-00176.

Appendix A: Emission Calculations

Summary of PTE

Company Name: **Heraeus Kulzer, Inc.**
Address City IN Zip: **4315 S.Lafayette Blvd, South Bend, IN 46614**
CP#: **141-12896**
Plt ID: **141-00176**
Reviewer: **GS**
Date: **November 10, 2000**

Potential to Emit (Tons/Year)

Activity Type	PM	PM-10	SO2	VOC	CO	NOx	HAP	HAPS
Dust Collectors	0.2	0.2	-	-	-	-	-	-
NG Combustion	0.1	0.6	-	0.4	6.4	7.7	-	-
Surfac Coating	0.43	0.43	-	3.85	-	-	-	-
Cleaners	-	-	-	2.64	-	-	-	-
Total	**0.73**	**1.23**	**0**	**6.89**	**6.4**	**7.7**		

From page 2,3 and 4 of the Appendix A

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: **Heraeus Kulzer, Inc.**
Address City IN Zip: **4315 S.Lafayette Blvd, South Bend, IN 46614**
CP: **141-12896**
Plt ID: **141-00176**
Reviewer: **GS**
Date: **November 10, 2000**

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
17.5	153.1

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.1	0.6	0.0	7.7	0.4	6.4

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Appendix A: Emissions Calculations
Dust Collectors for Gypsum Packaging

Company Name: **Heraeus Kulzer, Inc.**
Address City IN Zip: **4315 S.Lafayette Blvd, South Bend, IN 46614**
CP: **141-12896**
Plt ID: **141-00176**
Reviewer: GS
Date: November 10, 2000

Name	Grain Loading grain/acf	Air flow acfm	Emission Rate before Control lb/hour	Emission Rate before Control tons/year	Control Efficiency %	Emission Rate after Control lb/hour	Emission Rate after Control tons/year
DC-2	0.79722	3000.00	20.50	89.79	99.90%	0.02	0.09
DC-3	0.79722	3000.00	20.50	89.79	99.90%	0.02	0.09
DC-4	0.007	1000.00	0.06	0.26	99.90%	0.00	0.00
DC-5	0.07	3000.00	1.80	7.88	99.70%	0.01	0.02
						Total	0.20

Note: Assume all PM to be PM10

Grain loading and Air flow information as provided in the application

Methodology

Emission (pounds per hour) = grain loading (grains/acf) X airflow (acfm) X 1/7000 (lb / grains) X 60 (minutes / hour)

Emission (tons per year) = Emissions (pounds per hour) X 8760 (hours / year) X 1/2000 (tons/pound)

Emissions after control = Emissions before controls X (1- control efficiency)

Appendix A: Emissions Calculations
Ultrasonic Cleaners

Company Name: **Heraeus Kulzer, Inc.**
Address City IN Zip: **4315 S.Lafayette Blvd, South Bend, IN 46614**
CP: **141-12896**
Plt ID: **141-00176**
Reviewer: GS
Date: November 10, 2000

Chemical	Usage lb/hour	Emission factor AP 42	PTE for VOC tons/year
Methanol	10.10	1.50%	0.66
Isopropyl Alcoh	45.20	1.00%	1.98
		Total	2.64

Emission Factor from AP-42 6.4 - Paint and Varnish Manufacturing
Methodology

Emission (tons per year) = usage (pounds per hour) X Emission Factor X 8760 (hours / year) X 1/2000 (tons/pound)

Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations

Company Name: **Heraeus Kulzer, Inc.**
Address City IN Zip: **4315 S.Lafayette Blvd, South Bend, IN 46614**
CP: **141-12896**
Plt ID: **141-00176**
Reviewer: GS
Date: November 10, 2000

Material	Density (Lb/Gal)	Weight % Volatile (H20 & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
2179 Hard Hat aeroso	6.6	75.70%	0.0%	75.7%	0.0%	24.30%	0.70300	0.250	5.00	5.00	0.88	21.07	3.85	0.43	20.56	65%
State Potential Emissions			**Add worst case coating to all solvents**								**0.88**	**21.07**	**3.85**	**0.43**		

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = Worst Coating + Sum of all solvents used